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动物分类学报

中国辽宁新的原哈格鸣螽科化石(直翅目,原哈格鸣螽科,赤峰鸣螽亚科)

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摘 要 描述原哈格鸣螽科化石 1 新属:糙哈格鸣螽属 Trachohagla gen. nov., 4 新种:热河糙哈格鸣螽 Trachohagla jeholia sp. nov.,阔翼赤峰鸣螽 Chifengia lata sp. nov.,渐狭赤峰鸣螽 Chifengia angustata sp. nov.,阔基线哈格鸣螽 Grammohagla latibasis sp. nov.。所有化石标本均采于辽宁西部晚侏罗世义县组地层,现存于首都师范大学生命科学学院。

关键词 直翅目,原哈格鸣螽科,赤峰鸣螽亚科,新属,新种,中国.
中图分类号 Q915.819.7

赤峰鸣螽亚科 Chifengiinae Hong, 1982 是目前原哈格鸣螽科已发表的 6 个亚科之一(Gorochov, 1995, 2003),由洪友崇于 1982 年建立(Hong, 1982b)。1995 年 Gorochov 在调整直翅目的科级分类系统时,沿用了本亚科名,并将 Ashanga Zherikhin, 1985 等 4 属归入本亚科(Gorochov, 2003)。

该亚科目前共记录 7 属,其中 Ashanga Zherikhin, 1985 分布于贝加尔地区晚侏罗世(Zherikhin, 1985); Parahagla Sharov, 1968 分布于贝加尔地区早白垩世地层(Sharov, 1968); Chifengia Hong, 1982 分布于内蒙古早白垩世(洪友崇, 1982b); Hebeihagla Hong, 1982 和 Habrohagla Ren, 1995 分布于河北晚侏罗世(洪友崇, 1982a; 任东, 1995)。Grammohagla Meng et Ren, 2006 与 Aethehagla Meng et Ren, 2006 分布于辽宁晚侏罗世。

最近我们自辽宁省北票义县组(Yixian Formation)地层中采得大量昆虫化石(Tan et Ren 2006, Liu et Ren, 2006),其中包括了本文描述的 4 件赤峰鸣螽亚科化石。伴生的植物、鸟类、爬行类和其它昆虫类化石均表明化石的地质年代为晚侏罗世(王五力等, 2005)。本文描述的标本现保存于首都师范大学昆虫演化与环境变迁重点实验室。

本文所有线条图均借助于 Leica 显微镜附带绘图臂辅助完成。采用的术语参考 Gorochov 所采用的系统(Gorochov, 1995, 2003)。

原哈格鸣螽科 Prophalangopisdae Kirby, **1906**

赤峰鸣螽亚科 Chifengiinae Hong, **1982**

Chifengiinae 洪友崇, 1982. 酒泉盆地昆虫化石: 71~80.
Chifengiinae Gorochov, 1995. Trudy Zool. Inst. Ross. Akad., 260: 126-137.
Chifengiinae 孟祥明,任 东. 2006. 动物分类学报, 31 (2): 282~288.

糙哈格鸣螽属,新属 Trachohagla gen. nov.

模式种: Trachohagla jeholia sp. nov.

鉴别特征 Fc 不明显。Sc 脉直,支脉 10 枝。R1 脉末端 5 枝, Rs 脉枝脉不少于 5 枝。MP 脉与 CuA 脉融合后立即分支。MP + CuA1 脉末端可见 3 枝。M-Cu 区基干部略宽于 Sc-R 区基干部。

比较与讨论 新属 Fc 不明显与 Ashanga Zherikhin, 1985, Aethehagla Meng et Ren, 2006 明显不同。MP + CuA1 脉在 MP 与 CuA1 汇合后立即分支与 Chifengia Hong, 1982, Habrohagla Ren, 1995, Parahagla Sharov, 1968, Hebeihagla Hong, 1982, Grammohagla Meng et Ren, 2006 差异明显。

词源: Trachohagla (Trach-源自希腊词,粗糙) + hagla (Haglidae 科模式属 Hagla),阴性。

热河糙哈格鸣螽,新种 Trachohagla jeholia sp. nov. (图 1, 4)

正模: 1 块部分保存的雄虫前翅标本,编号 CNU-O-LB-2006008。

国家自然科学基金(30025006, 30370184, 30430100)、北京市自然科学基金(5032003)、北京市教育委员会科技发展计划重点项目(KZ200410028013)和北京市高校人才强教计划共同资助.
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产地及层位：辽宁北票炒米甸黄半吉沟，义县组（晚侏罗世）。

描述　翅长 32 mm，翅宽 6 mm（保存部分），翅面具带斑。Fc 不明显。Sc 脉直，约在翅长 2/3 处达翅前缘，支脉 10 枝，近平行排列，均达翅前缘。R 脉靠近 Sc 脉，自翅基发出，在达翅长 1/3 处分支。R1 脉约在翅长中点处再分支，不少于 5 枝，达前缘。Rs 脉主干向下缘微弯，距翅基约 2/3 翅长处再次分支，支脉不少于 6 枝，微弯，梳状排列。Sc-R 区基干部较窄，有横脉发育。R-Rs 区基干部较宽，有平行排列的横脉发育。M 脉略呈弓形自翅基发出，MA 脉自距翅基约 1/4 翅长处叉状分支，2 支脉弓形，近平行排列，其间横脉发育，达翅下缘。R-M 区基干部宽，有多组不同类型横脉发育。MP 脉自 MA 脉分支点前分出，与 CuA 脉融合后立即分支。MP 脉位于 M-Cu 区部分较长。MP + CuA1 脉分支稍早于 R，MP + CuA1 脉末端可见 3 枝。Cu 脉主干发自翅基，弧形，CuP 脉弧形最低点处分出。M-Cu 区基干部略宽于 Sc-R 区基干部，自基部起至弧底渐宽。MP 弯曲，粗壮，排列发音齿。

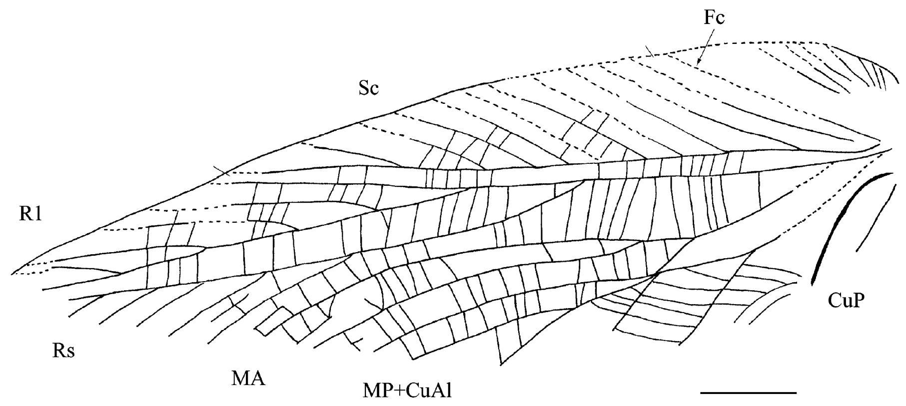

图 1　热河糙哈格鸣螽，新种 Trachohagla jeholia sp. nov., CNU-O-LB-2006008　比例尺（scale bar）= 5 mm

词源：jeholia 源自热河生物群的分布地。

赤峰鸣螽属 Chifengia Hong, 1982

Chifengia 洪友崇, 1982. 酒泉盆地昆虫化石: 71～80.

Chifengia 王五力, 1987. 辽宁西部中生代地层古生物: 212～214.

Chifengia Gorochov, 1995. Trudy Zool. Inst. Ross. Akad., 260: 126-137.

Chifengia 孟祥明, 任　东, 2006. 动物分类学报, 31（2）: 282～288.

模式种：Chifengia mosaica Hong, 1982

阔翼赤峰鸣螽，新种 Chifengia lata sp. nov.（图 2, 5）

正模：1 块保存较好的雌虫前翅标本，编号 CNU-O-LB-2006009。

产地及层位：辽宁北票炒米甸黄半吉沟，义县组（晚侏罗世）。

描述　前翅：长 34 mm，宽 18 mm（保存部分）。翅面具带斑，Sc 脉略呈 S 型，约在翅长 3/4 处达翅前缘，支脉 10 枝，近平行排列，均达翅前缘。无明显 Fc 脉。前缘区纵脉放射状排列。R 脉靠近 Sc 脉，自翅基发出，约在翅长 1/3 处分支。R1 脉在越过翅长中点后再分支，末端 5 枝，达前缘。Rs 脉主干向下缘微弯，距翅基约 2/3 翅长处再次分支，支脉约 6 枝，微弯，梳状排列，均达翅缘。Sc-R 区基干部较窄，有横脉发育。R-Rs 区基干部较宽，有平行排列的横脉发育。M 脉略呈弓形自翅基发出，MA 脉自距翅基约 1/3 翅长处叉状分支，二支脉弓形，近平行排列，其间横脉发育，达翅下缘。R-M 区基干部宽，有多组不同类型横脉发育。MP 脉自 MA 脉分支点前分出，与 CuA 脉融合，共生一段后分支。MP 脉位于 M-Cu 区部分较长。MP + CuA1 脉与 R 几乎同时分支，MP + CuA1 脉末端带 3 枝。Cu 脉主干发自翅基，略呈弧形。M-Cu 区基干部与 Sc-R 区基干部近等宽，自基部起至弧底渐宽。臀脉可见 2 枝，达翅下缘。

比较讨论　新种与 Chifengia mosaica Hong, 1982，Chifengia amans Meng et Ren, 2006，相近，但新种 Sc 11 枝，R15 枝，Rs7 枝，MP + CuA1 脉末端 4 枝。MA 脉分支早于 R 脉分支。

词源：lata 源自拉丁词 latus，宽的、阔的。

渐狭赤峰鸣螽，新种 Chifengia angustata sp. nov.（图 3，6）

正模：1 块保存较好的雌虫前翅标本，编号 CNU-O-LB-2006006。

产地及层位：辽宁北票炒米甸黄半吉沟，义县组（晚侏罗世）。

描述　前翅长 35 mm，宽 18 mm（保存部分）。Sc 脉略呈 S 型，约在翅长 3/4 处达翅前缘，支脉 12

枝，近平行排列，均达翅前缘。无明显 Fc 脉。前缘区纵脉平行 Sc 支脉。R 脉靠近 Sc 脉，自翅基发出，约在翅长 1/3 处分支。R1 脉在达翅长中点前再分支，末端 6 枝，达前缘。Rs 脉主干向下缘微弯，距翅基约 2/3 翅长处再次分支，支脉约 5 枝，微弯，梳状排列，均达翅缘。Sc-R 区基干部较窄，有横脉发育。R-Rs 区基干部较宽，有平行排列的横脉发育。M 脉略呈弓形自翅基发出，MA 脉自距翅基约 1/3 翅长处叉状分支，二支脉弓形，近平行排列，其间横脉发育，达翅下缘。R-M 区基干部宽，有多组不同类型横脉发育。MP 脉自 MA 脉分支点前分出，与 CuA 脉融合，共生一段后分出。MP 脉位于 M-Cu 区部分较长。MP + CuA1 脉与 R 几乎同时分支，MP + CuA1 脉末端带 4 枝。Cu 脉主干发自翅基，略呈弧形。M-Cu 区基干部略窄于 Sc-R 区基干部，自基部起至弧底渐宽。臀脉可见 3 枝，弓形，达翅下缘。

比较讨论 新种与 Chifengia mosaica Hong, 1982, Chifengia amans Meng et Ren, 2006 相近，但新种 Sc 13 枝，MP + CuA1 脉末端 6 枝。MA 脉分支明显早于 R 脉分支。

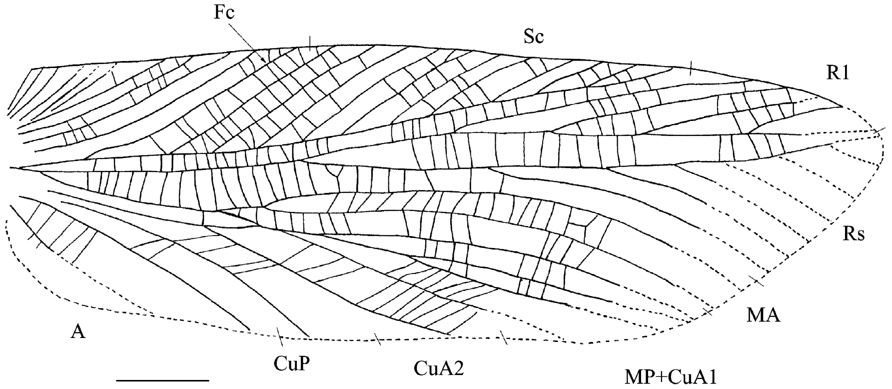

图 2 阔翼赤峰鸣螽，新种 Chifengia lata sp. nov., CNU-O-LB-2006009 比例尺 (scale bar) = 5 mm

词源：angustata 源自拉丁词 angustatus，变狭的。

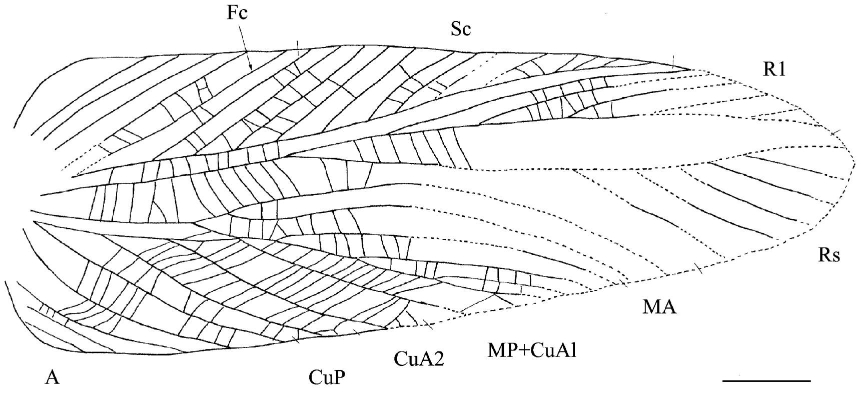

图 3 渐狭赤峰鸣螽，新种 Chifengia angustata sp. nov., CNU-O-LB-2006006 (为方便比较，线条图翅端部向右) 比例尺 (scale bar) = 5 mm

线哈格鸣螽属 Grammohagla Meng et Ren, 2006

Grammohagla 孟祥明，任 东，2006. 动物分类学报，31 (2): 282-288. 模式种：Grammohagla striata Meng and Ren, 2006.

阔基线哈格鸣螽，新种 Grammohagla latibasis sp. nov. (图 7, 8)

正模：1 块保存较好的雌虫前翅标本，编号 CNU-O-LB-2006007。

产地及层位：辽宁北票炒米甸黄半吉沟，义县组 (晚侏罗世)。

描述 前翅长 40 mm，宽 19 mm。Sc 脉直，约在翅长 3/4 处达翅前缘，支脉 9 枝，近平行排列，均达翅前缘。Fc 脉不明显，与 Sc 脉基部支脉近于平行。前缘区纵脉平行于 Sc 支脉。R 脉靠近 Sc 脉，自翅基发出，约在翅长 1/3 处分支。R1 脉在达翅长中点前再分支，末端 6 枝，达前缘。Rs 脉主干向下缘微弯，约在翅长中点处再次分支，支脉约 8 枝，微弯，梳状排列，均达翅前缘。Sc-R 区基干部较窄，有横脉发育。R-Rs 区基干部较宽，有横脉发育。M 脉略呈弓形自翅基发出，MA 脉自距翅基约 1/4 翅长处叉状分支，2 支脉弓形，近平行排列，其

图 4～7　**模式标本**（holotype）

4. **热河糙哈格鸣螽，新种** Trachohagla jeholia sp. nov.，CNU-O-LB-2006008 5. **阔翼赤峰鸣螽，新种** Chifengia lata sp. nov.，CNU-O-LB-2006009 6. **渐狭赤峰鸣螽，新种** Chifengia angustata sp. nov.，CNU-O-LB-2006006 7. **阔基线哈格鸣螽，新种** Grammohagla latibasis sp. nov.，CNU-O-LB-2006007　**比例尺**（scale bar）＝5 mm

间横脉发育，达翅下缘。R-M 区基干部宽，有多组不同类型横脉发育。MP 脉分出后与 CuA 脉融合，共生一段后分出。MP 脉位于 M-Cu 区部分较长。MP + CuA1 脉分支略早于 R，MP + CuA1 脉末端带 5 枝。Cu 脉主干发自翅基，弧形，CuP 脉弧形最低点处分出。M-Cu 区基干部窄于 Sc-R 区基干部，自基部起至弧底渐宽。臀脉弓形，达翅下缘。

讨论 新种与 *Grammohagla striata* Meng et Ren 2006 相似，但新种 Sc 带 9 枝。R1 末端 6 枝，Rs 带 8 枝。MP + CuA1 脉末端带 5 枝。

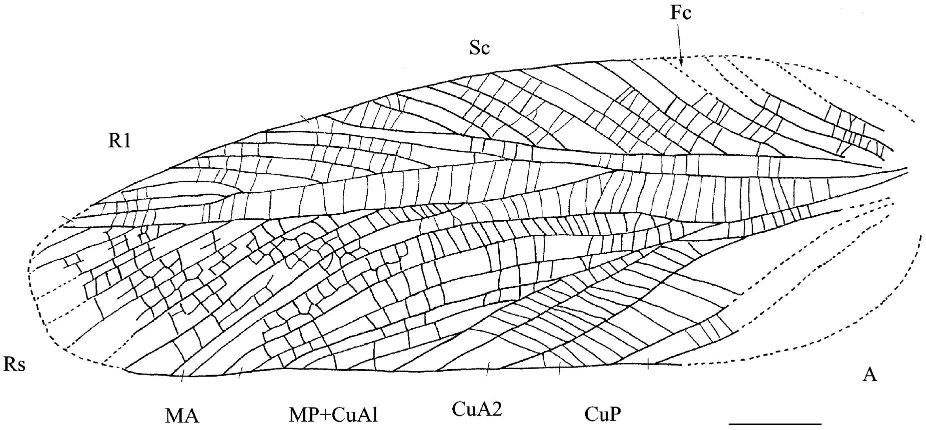

图 8 阔基线哈格鸣螽，新种 *Grammohagla latibasis* sp. nov., CNU-O-LB-2006007 比例尺 (scale bar) = 5 mm

词源："latibasis"源自拉丁词，latibasis 宽基部的。

致谢 承本实验室梁军辉、刘明、谭京晶、刘玉双等同学的大力帮助，在此表示感谢。

REFERENCES (参考文献)

Gorochov, A. V. 1995. System and Evolution of the Suborder Ensifera (Orthoptera). Pt. 1. Trudy Zool. Inst. Ross. Akad. Nauk 260. Zool. Inst. Ross. Akad. Nauk, St.-Petersburg. 126-137. (in Russian).

Gorochov, A. V. 2003. New data on taxonomy and and evolution of fossil and Recent Prophalangopsidae (Orthoptera: Hagloidea). Acta Zoologica Cracoviensia, 46 (suppl. -Fossil Insects): 117-127.

Gorochov, A. V. and Rasnitsyn, A. P. 2002. Superorder Gryllidea. In: Rasnitsyn, A. P. and Quicke, D. L. J. (eds.), History of insects. Kluwer Academic Publisher, Norwell. 293-313.

Hong, Y-C 1982a. Fossil Haglidae (Orthoptera) in China. Scientia Sinica (series B), 25 (10): 1 118-1 129. [洪友崇, 1982a. 中国直翅目哈格鸣螽科化石. 中国科学 B 辑, 25 (10): 1 118～1 129]

Hong, Y-C 1982b. Mesozoic Fossil Insets of Jiuquan Basin in Gansu Province. Geological Publishing House, Beijing. 71-80. [洪友崇, 1982b. 酒泉盆地昆虫化石. 北京: 地质出版社. 71～80]

Liu, M and Ren, D 2006. First fossil Eccopterthridae (Coleoptera: Curculionoidea) from the Mesozoic of China. Zootaxa, 1 176: 59-68.

Meng, X-M and Ren, D 2006. Late Jurassic Prophalangopisds from Northeast China (Orthoptera: Prophalangopisdae, Chifengiinae). Acta Zoo. Sin., 31 (2): 282～288. [孟祥明, 任 东, 2006. 中国东北晚侏罗世原哈格鸣螽科化石新发现 (直翅目: 原哈格鸣螽科, 赤峰鸣螽亚科). 动物分类学报, 31 (2): 282～288]

Ren, D 1995. Fossil Insects Part. Faunae and Stratigraphy of Jurassic-Cretaceous in Beijing and the Adjacent Areas. Earthquake Publishing House, Beijing. 61-65. [任 东, 1995. 昆虫化石部分. 北京与邻区侏罗-白垩纪动物群及其地层. 北京: 地震出版社. 61～65]

Sharov, A. G. 1968. Phylogeny of the Orthopteroidea. Trudy Paleontol. Inst. Akad. Nauk SSSR 118. Nauka, Moscow. 218 p. (in Russian)

Tan, J-J and Ren, D 2006. Ovatocupes: A new cupedid genus (Coleoptera: Archostemata: Cupedidae) from the Jehol Biota (Late Jurrasic) of Western Liaoning, China. Entomol. Newes. 117 (2): 223-232.

Wang, W-L 1987. The Early Mesozoic insect fossils in Western Liaoning. In: Yu, X-H, Wang, W-L, Liu, X-T and Zhang, W (eds.), Mesozoic Stratigraphy and Palaeontology of Western Liaoning III. Geological Publishing House, Beijing. 212-214. [王五力, 1987. 辽宁西部早中生代昆虫化石. 于希汉, 王五力, 刘宪亭, 张 武 (主编), 辽宁西部中生代地层古生物 (三). 北京: 地质出版社. 212～214]

Wang, W-L, Zhang, L-J, Zheng, S-L, Ren, D, Zheng, Y-J et al. 2005. The age of the Yixianian Stage and the Boundary of Jurassic-Cretaceous-The establishment and study of stratotypes of the Yixianian Stage. Geol. Rev., 51 (3): 234-242. [王五力, 张立君, 郑少林, 任 东, 郑月娟等, 2005. 义县阶的时代与侏罗系-白垩系界线-义县阶标准地层剖面建立和研究之三. 地质评论, 51 (3): 234～242]

Zherikhin, V. V. 1985. The Jurassic Orthoptera in South Siberia and West Mongolia. In: Rasnitsyn, A. P. (ed.), Jurassic Insects of Siberia and Mongolia. Trudy Paleontol. Inst. Akad Nauk SSSR 211. Nauka, Moscow. 171-184 (in Russian).

NEW PROPHALANGOPISD FOSSILS FROM LIAONING, CHINA (ORTHOPTERA, PROPHALANGOPISDAE, CHIFENGIINAE)

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Abstract In this article, one new genus and four new species were described and illustrated. All the type specimens described here were collected from the Late Jurassic Yixian Formation, Liaoning Province, China, and deposited in Capital Normal University.

Trachohagla gen. nov.

Type species: Trachohagla jeholia sp. nov.

Diagnosis. Forewing Fc (False Costal) indistinct. Sc straight, with 10 branches. Rs with at least 6 branches. MP meet with CuA1 just on a point and then leave immediately, never fuse with it for a long distance. The basal part of M-Cu field is wide than the basal part of Sc-R field. MP + CuA1 forks early than R. MP + CuA1 with at least 3 terminal branches.

Discussion. This new genus is distinct from Ashanga Zherikhin, 1985 and Aethehagla Meng et Ren, 2006 by Fc strongly degenerated. The new genus is somewhat similar to Parahagla Sharov, 1968, Chifengia Hong, 1982, Hebeihagla Hong, 1982, Habrohagla Ren, 1995 and Grammohagla Meng et Ren, 2006. However, it could be distinguished by the following character: MP meet with CuA1 just on a point and then leave immediately, never fuse with it for a long distance.

Etymology. Trach- (from Greek: Trach-, means rough) + hagla (name of genus hagla), feminine.

Trachohagla jeholia sp. nov. (Figs. 1, 4)

Holotype. A partly preserved fore-wing of male insect. Registration No. CNU-O-LB-2006008.

Locality and horizon. Late Jurassic, Yixian Formation, Beipiao City, Liaoning Province.

Description. Forewing length 32 mm, width 6 mm (as preserved). The details are shown in Figs. 1, 4.

Chifengia lata sp. nov. (Figs. 2, 5)

Etymology. Lata from Latin, means wide.

Holotype. A well preserved forewing of female insect. Registration No. NU-O-LB-2006009.

Locality and horizon. Late Jurassic, Yixian Formation, Beipiao City, Liaoning Province.

Description. Length 34 mm, width 18 mm (as preserved). The forewing zonally spotted. Fc indistinct. Sc "S" shaped, with 10 branches. R1 with 4 branches, Rs with about 6 branches. The width of the basal part of M-Cu field equal to the basal part of Sc-R field. MP + CuA1 and R forks at the same level. MP + CuA1 with 3 terminal branches. The details are shown in Figs. 2, 5.

Discussion. This new species is similar to Chifengia mosaica Hong, 1982 and Chifengia amans Meng et Ren, 2006. Whereas the new genus could be distinguished by the following characters: Sc "S" shaped, with 10 branches; MP + CuA1 with 3 terminal branches; MA forks early than R forking.

Chifengia angustata sp. nov. (Figs. 3, 6)

Etymology. Angustata from Latin, means narrow gradually.

Holotype. A well preserved forewing of female insect. Registration No. CNU-O-LB-2006006.

Locality and horizon. Late Jurassic, Yixian Formation, Beipiao City, Liaoning Province.

Description. Length 35 mm, width 18 mm (as preserved). Fc indistinct. Sc "S" shaped, with 12 branches. R1 with less than 5 branches. Rs with about 5 branches. The basal part of M-Cu field slightly narrower than the basal part of Sc-R field. MP + CuA1 and R forks at the same level. MP + CuA1 with 4 terminal branches. The details are shown in Figs. 3, 6.

Discussion. This new species is similar to Chifengia mosaica Hong, 1982, Chifengia amans Meng et Ren, 2006. Whereas the new genus could be distinguished by the following characters: Sc "S" shaped, with 12 branches; MP + CuA1 with 4 terminal branches; MA forks early than R forking.

Grammohagla latibasis sp. nov. (Figs. 7, 8)

Etymology. Latibasis from Latin, means wide at the basal part.

Holotype. A well preserved forewing of female insect, registration No. CNU-O-LB-2006007.

Locality and horizon. Late Jurassic, Yixian Formation, Beipiao City, Liaoning Province.

Description. Length 40 mm, width 19 mm. Forewing Fc indistinct. Sc straight, extending about 3/4 of the wing length, with 9 parallel branches. R1 with 6 terminal branches. Rs with about 8 branches. MP + CuA1 forks slightly early than R. MP + CuA1 with 5 terminal branches. The details are shown in Figs. 7, 8.

Discussion. This new species is similar to Grammohagla striata Meng et Ren, 2006. Whereas the new genus could be distinguished by the following characters: Sc straight, extending about 3/4 of the wing length, with 9 branches. R1 with 6 terminal branches. Rs with about 8 branches. MP + CuA1 with 5 terminal branches.

Key words Orthoptera, Prophalangopsidae, Chifengiinae, new genera, new species, China.